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soil may account for its absence. The trees of the county in size compare favorably with those of other counties I have examined. *Fagus ferruginea*, *Liriodendron Tulipifera*, and *Platanus occidentalis* do not attain the size here that they do in the more southern counties. But on the other hand the *Querci* far exceed their kinsmen, here becoming true monarchs of the forest. I have had no opportunities for extended measurements, yet I have on my list two of this genus with a diameter exceeding 7 feet, two exceeding 6 feet and seventeen exceeding 5 feet. A striking feature to my mind is the young growth of *Juglans nigra*, L., which of late years is springing up every where. I have not found a single instance in which it has been cultivated and yet in one case I counted in a forest not exceeding 10 acres in area, 165 representatives of this species, from 6 to 12 inches in diameter. I have noticed the same fact in Grant county. This seems a strange fact, the more so since the older growth where it occurs contains but few individuals, nor do the stumps indicate that it ever had any great predominance. I would like to know whether this has been noted in any other locality.—M. S. COULTER, *Logansport, Ind.*

THE OAKS OF THE UNITED STATES. BY DR. GEORGE ENGELMANN.—In this pamphlet of twenty pages read before the Academy of Science of St. Louis, March 20, 1876, Dr. Engelmann, in his usual happy style, has let a flood of light upon a very dark and perplexing genus. The Oaks, with their endless forms, have long been a puzzle and it should be a great relief to amateurs when a botanist of such acknowledged keenness of observation takes hold of the subject, and while guiding us to some extent in the straight, clear path through these intricacies, at the same time acknowledges the difficulties in the way. The author first calls attention to the "striking example of the deceptive polymorphism" of western oaks furnished by the common Rocky Mountain scrub-oak. No fewer than 4 or 5 species have been founded upon the different forms of this scrub-oak. "In herbarium specimens they all appear distinct enough, but, looking around us the very abundance of material must shake our confidence in our discrimination: within the compass of a few hundred yards we find not only the forms above distinguished, but numbers of others which are neither the one nor the other, but which are intermediate between them and clearly unite them all as forms of one single extremely polymorphous species. If one oak behaves thus, why not others? Thrown into a sea of doubt, what can guide us to a correct knowledge?" The author then takes up in detail the various features that are of use in determining the groups and species. He considers the trunk—its bark as well as its wood—and remarks that the "popular distinction of 'White-oaks' and 'Black-oaks' is based on correct observation." The leaves are then considered, principally as to their veneration and the author states it as his belief "that the characters of veneration will not only help to distinguish allied species or doubtful varieties, but will also assist in unravelling the intricate questions of hybridity." The male flowers, female flowers and fruit are spoken of in turn with their importance for furnishing valuable characters to distinguish the groups and species. In conclusion the author observes that our oaks, leaving out the very peculiar Californian *Q. densiflora*, "arrange themselves into two great groups, alluded to above as the White-oaks and Black-oaks.

The *White-oaks* are characterized by paler, often scaly bark, tougher and denser wood, and sessile or subsessile stigmas, and bear the abortive ovules at the base or rarely on the side of the perfect seed. Besides this, the leaves and their lobes or teeth are obtuse, never bristle-pointed, though sometimes spinous-tipped; their stamens are more numerous, the scales of the cup more or less knobby at base, the inner surface of the nut glabrous or (rarely) pubescent; the fruit generally matures in the first year.

The *Black-oaks* have dark, furrowed bark, brittle and porous wood, styles long and spreading or recurved, abortive ovules always near the tip of the perfect seed. The leaves and their lobes are bristle-pointed, at least in youth; lobes and teeth

acute; teeth sometimes spinous. Their stamens are usually less numerous, the scales of their cup membranaceous, the inner surface of their nut always tomentose; the fruit generally matures in the second year."

Then follow some notes upon our 19 species, including their range and synonymy. The pamphlet closes with the consideration of "Hybrid Oaks." The author says that White-oaks and Black-oaks are too distinct to hybridize with one another, and that thus far no hybrids have been discovered among the former, while among the Black-oaks he finds six forms. Four of these hybrids have been found in the Mississippi Valley and two in South Carolina. The four western hybrids all claim *Q. imbricaria* as one of the parents and *Q. coccinea*, *Q. rubra*, *Q. palustris*, *Q. nigra* as belonging in turn to each hybrid as the other parent. The two southeastern hybrids claim *Q. cinerea* as one parent and *Q. Catesbæi* or *Q. falcata* as the other.—ED.

NOTES ON AGAVE. BY GEO. ENGELMANN, M. D.—The plants of this genus are so difficult of preservation that very scanty and unsatisfactory material has been furnished botanists for study. Within the last few years, however, a quantity of new material has been placed in the hands of Dr. Engelmann and the result is a monograph on the genus *Agave*. The author states that the native country of the Agaves is America, and especially Mexico. He then proceeds to an enumeration of the species of the territory of the United States. The genus is divided into three sections, *Singulifloræ*, *Geminifloræ*, and *Paniculatæ*, the last being the typical Agaves. The section *Singulifloræ* contains 3 species, *A. maculosa*, Hook., *A. Virginica*, L., the only representative of the genus known in the old United States, and *A. variegata*, Jacobi. The section *Geminifloræ* contains 5 species, *A. falcata*, Engelm., *A. Schottii*, Engelm., *A. parviflora*, Torr., *A. heteracantha*, Zucc., and *A. Mathensis*, Engelm. The section *Paniculatæ* contains 8 species, *A. Newberryi*, Engelm., *A. deserti*, Engelm., *A. Parryi*, Engelm., *A. Antillarum*, Descourt., *A. Shawii*, Engelm., *A. rigida*, Mill., *A. Palmeri*, Engelm., and *A. Wislizeni*, Engelm. Accompanying the monograph are three photographic views of *A. Shawii*.—ED.

MAGNOLIA ACUMINATA, L. (CUCUMBER-TREE).—This beautiful species is found growing within two miles of Hanover, and is one of the handsomest trees in the county. It is of very rare occurrence here, but where it has started seems to grow in clumps of considerable size. The trees are not as large as those reported from farther south, but they are of most perfect shape. The farmer who reported them growing on his farm, described them to me as being almost perfectly "egg-shaped." He afterwards brought me a large number of the branches with the fruit on them. The leaves are a beautiful ovate and not much acuminate, five to ten inches long, green above, whitish pubescent beneath. I was surprised at the size and shape of the fruit. All descriptions to which I have access gave me the idea of a small cone of fruit, two or three inches long. The fruit I have is nothing of the sort. I can not see a cone in all of it, or anything approaching cone-shape. No two specimens are alike. They assume all sorts of fanciful shapes and seem to vie with each other in irregularity. There are boots and crescents and clubs and knotted cudgels and nameless shapes. These shapes are controlled by the ripening of the seeds. Certain seeds will outstrip the others in growth and the consequence is a swelling on their side of the fruit. The boot-shape seems the most common and is always brought about by the ripening of two seeds, one in the apex and one in the base of the cone, and these parts enlarging excessively, and the other parts remaining *in statu quo*, form the toe and heel of the boot. All the fruits are lumpy and every lump contains a ripening seed. In my specimens I have never found more than 5 or 6 seeds ripening. The fruits, instead of being only 2—3 inches long, are 2—5 inches long, the largest always being found at the top of the tree. When they have turned a dark red, split open, and the seeds hang out on long threads, the trees present a strange and beautiful appearance. In drying, the red fruit becomes perfectly black.—ED.